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STATEMENT

by Mihaela Nikolova Nedyalkova, Associate Professor, PhD, IBER - BAS

on the dissertation for the award of the educational and scientific degree "PhD" in the field of higher education 4. PhD in Doctor of Philosophy, in Natural Sciences, Mathematics and Informatics, professional field 4.3. Biological sciences, Doctoral Programme "Ecology and Conservation of Ecosystems"

Author: Blagovesta Dimitrova Dimitrova

Topic: IMPACT OF PESTICIDES ON AMPHIBIAN SPECIES FROM PONDS WITH DIFFERENT DEGREES OF ANTHROPOGENIC IMPACT IN CENTRAL BULGARIA

Scientific supervisor: Assoc. Prof. Dr. Simeon Lukanov

1. General presentation of the procedure and the doctoral student

By order No. 22/07.03.2025 of the Director of IBER-BAS, I have been appointed as a member of the scientific jury for ensuring a procedure for the defense of a dissertation on the topic "Impact of pesticides on amphibious species from water reservoirs with different degrees of anthropogenic impact in central Bulgaria" for the acquisition of the educational and scientific degree "doctor" in the field of higher education 4. Natural sciences, mathematics and informatics, professional field 4.3. Biological sciences, doctoral program "Ecology and conservation of ecosystems". The author of the dissertation is Blagovesta Dimitrova Dimitrova - a doctoral student in full-time education at the Department of Ecosystem Research, Ecological Risk and Conservation Biology at IBER-BAS, with scientific supervisor assoc. prof. dr. Simeon Lukanov.

The set of materials presented by Blagovesta Dimitrova Dimitrova is in accordance with the Regulations for the Development of the Academic Staff of the Republic of Bulgaria, the Regulations of the Bulgarian Academy of Sciences and the Regulations of the IBER-BAS.

2. Relevance of the topic

The present dissertation is based on a very current and acute problem not only in our country, but also worldwide, related to the globalization of agricultural practices, which very often lead to loss of biodiversity due to fragmentation or excessive use of pesticides, fertilizers, heavy metal pollution, etc. Rice fields exposed to various anthropogenic pollutants are a vivid example in this regard. The focus is on amphibians as a model object. They are also one of the most endangered groups of vertebrates. One of the main reasons for the decline in the diversity and size of their populations is rooted precisely in insufficiently regulated agricultural practices.

The results obtained from this complex study unequivocally show that agricultural territories are no less important than natural habitats when it comes to clarifying existing and potential conservation problems related to amphibians. The convincing results obtained from both field

research and laboratory experiments once again emphasize the relevance of the topic of this doctoral study.

3. Knowledge of the problem

The doctoral candidate makes a detailed and critical analysis of all currently available information on the research problem, providing data on the species composition, abundance and attachment of the studied amphibian species to the respective habitats and their interrelationships. She has been able to skillfully use this data in the comparative analysis of her own results from field studies and laboratory experiments. As a result of all this, the dissertation has a clearly outlined goal and tasks to be performed.

4. Research methodology

To achieve the set goals and objectives, the dissertation is divided into three main parts. A complex of mutually complementary and fully adequate field and laboratory methods has been applied. These include verification and establishment of the significance of agricultural territories for the distribution of amphibians in Bulgaria; application of acoustic methods for determining the species diversity in target reservoirs and collection of water samples from them; and conducting laboratory experiments to assess the impact of mass fertilizers and pesticides on the survival, development and behavior of two species of tadpoles – *Rana dalmatina* and *Bufo bufo*. Appropriate statistical analyses have been applied for data processing and reliability of the results obtained.

5. Characteristics and assessment of the dissertation work and contributions

The dissertation work is presented in the form of a book with a total volume of 122 pages and contains 7 main parts, which include 14 tables and 20 figures. The list of cited literature contains 202 titles. Very good literary awareness has been demonstrated, on the basis of which there are clearly constructed and well-formulated goals and objectives. Thanks to the complex of methods applied in the study, an impressive amount of data has been collected that can be used as a basis for future studies in the area. The work is very thorough and precise, with serious scientific-theoretical and scientific-applied conclusions of an original nature. The large amount of collected, analyzed and summarized information makes it possible to formulate and propose significant conclusions, which in the future would be of importance in making management decisions with conservation significance. A large and uniquely significant study of this kind has been conducted in our country.

The dissertation has an undoubted contribution to the development of ecotoxicological research and the results are of great importance for the future development of this field both on a national and European scale. 8 original scientific and 6 applied scientific contributions are presented, which are important not only for the reasons listed above, but also as a solid basis for the future career development of the doctoral student herself in this field.

In my opinion, the work would benefit if it were explained at the very beginning why tadpoles of *Rana dalmatina* and *Bufo bufo* were selected for the laboratory experiments, given that when determining the species composition in the target reservoirs, *Bufo viridis*, *Hyla orientalis* and *Pelophylax ridibundus* were registered.

Conclusion 1 could be specified. It is not clear what is meant by “large percentage”. In conclusion 3, it would be good to replace “large number” with “high number”.

6. Assessment of the publications and personal contribution of the doctoral student

The doctoral student has presented three scientific publications, all in refereed and indexed journals with SJR and IF, two of which in Q1 and one in Q4, thus meeting the minimum requirements of the Regulations for the Development of the Academic Staff of the Republic of Bulgaria and those of the IBER-BAS. The essential role of the doctoral student in these studies is obvious.

7. Conclusion

The content and quality of the abstract are in accordance with the requirements and accurately and clearly reflect the main results achieved in the dissertation.

In conclusion, I would like to congratulate the doctoral student for the enormous amount of work, the large number of data that she was able to collect, process and analyze during her doctoral studies. Such work requires perseverance, perseverance and love for work, which will bring the research to a successful conclusion.

CONCLUSION

The dissertation contains scientific and applied scientific results that represent an original contribution to science and meet all the requirements of the Regulations for the Development of the Academic Staff of the Republic of Bulgaria, as well as the Regulations of the IBER-BAS.

The dissertation shows that the PhD student Blagovesta Dimitrova Dimitrova possesses in-depth theoretical knowledge and professional skills in the scientific specialty "Ecology and Ecosystem Protection" by demonstrating qualities and skills for independent conduct of scientific research.

Due to the above, I confidently give my positive assessment of the conducted research, presented by the above-reviewed dissertation, abstract, achieved results and contributions, and I propose to the esteemed scientific jury to award the educational and scientific degree "doctor" to Blagovesta Dimitrova Dimitrova in the field of higher education 4. Natural sciences, mathematics and informatics, professional field 4.3. Biological Sciences, doctoral program "Ecology and Ecosystem Conservation".

18.05.2025 assoc. prof. M. Nedyalkova